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ABSTRACT

A review of the literature on residential segregation reveals that Blacks remain the most segregated group in American cities, despite the more recent arrival of Hispanic and Asian groups. By one measure--the index of dissimilarity with respect to Whites--Blacks are 1.6 times more segregated than Hispanics, and twice as segregated as Asians. Race is a far stronger correlate of residential segregation than cultural or ethnic differences. The segregation of blacks showed little improvement--and perhaps worsened--during the 1960s, despite heightened awareness and activity from civil rights activity. Substantial improvement during the 1970s offset this deterioration and left the nation's cities marginally less segregated in 1980 than in 1960. Researchers express conflicting opinions on the importance of black suburbanization in reducing measurable segregation. In general, large, slow-growing cities with large existing minority populations exhibit the most segregated residential patterns. The North Central region of the country consistently shows the highest levels of segregation and the least encouraging signs of improvement. Implications for future research are discussed. Data are presented on four tables and figures. A list of 39 references is included. (BJV)

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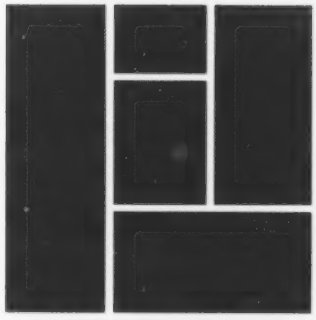
RESIDENTIAL SEGREGATION:

A REVIEW OF THE LITERATURE

Douglas B. Page



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RESIDENTIAL SEGREGATION:

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Washington, D.C. 20037

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Executive Summary

Segregation is a sufficiently complex concept that generalizations about trends or levels of segregation are seldom useful unless undergirded with knowledge of what was measured and how. A review of the literature on residential segregation leads to a more subtle understanding of the several aspects of segregation and how they can influence the experience of different groups in different ways.

It is clear that blacks remain the most segregated group in American cities, despite the more recent arrival of hispanic and Asian groups. By one measure—the index of dissimilarity with respect to whites—blacks are 1.6 times more segregated than hispanics, and twice as segregated as Asians. Race, and specifically black race, is a far stronger correlate of residential segregation than cultural or ethnic differences. Hispanics and Asians, by contrast, appear no more segregated than earlier European immigrant groups, and there are hopeful signs that cities will serve their traditional function in assimilating these groups into the larger society. The relative severity and intractibility of black-white segregation, however, becomes more clearly dysfunctional, conspiring to deny the access of some central city blacks to mainstream society, and manifest by some accounts in a growing underclass.

The segregation of blacks showed little improvement and even worsened by some measures during the 1960s, despite heightened awareness and activity on the civil rights front. Substantial improvements in the 1970s offset this deterioration and left the nation's cities marginally less

segregated in 1980 than they were in 1960. Researchers express conflicting opinions on the importance of black suburbanization in reducing measurable segregation.

In general, large, slow-growing cities with large existing minority populations exhibit the most segregated residential patterns. The North Central region of the country consistently shows the highest levels of segregation and the least encouraging trends of improvement.

Lessons from existing research should be applied to the general outline of an improved segregation study of 1990 Census data. Since individual measures of segregation are most meaningful when related to others, such a study should be more ambitious and broad than those done previously, facilitating valid comparisons between groups, years, types of city, and regions. Moreover, several measures of segregation are necessary to capture the several faces of segregation. Finally, there is ample room for the exploration of new techniques in both the description of segregation and the understanding of the spatial and demographic processes behind changes in segregation.

Introduction

Residential segregation is at once an obvious and an obscure fact of life in American cities: obvious because we can not help but recognize its presence daily, yet obscure because it eludes fully meaningful and effective quantitative measure. There is a voluminous literature on the subject, emerging traditionally from sociology, but increasingly also from economics, geography, and public policy. This review will skirt issues of housing discrimination and other causes of segregation in order to concentrate on the fact of residential segregation and its measurement. Emphasis will be on what is known about different aspects of segregation and how the severity of measurable segregation varies across time, minority group, region, and city type. In order to get beyond the most general statements about segregation, a preliminary discussion of the technical aspects of measuring segregation aids not only in understanding the literature but also in enhancing and building further specification of the concept of segregation.

1.0 Discussion of measures

There are essentially three measures of residential segregation in use. The most widespread, the index of dissimilarity (often referred to simply as D), measures the "evenness of distribution of races across neighborhoods" (Stearns and Logan 1986). D measures the dissimilarity between two groups and varies from 0 to 1. In the absence of segregation (D=0), every subarea of a metropolitan area would contain the same racial mix as the metropolitan area as a whole. In a city whose population was ten percent black, for example, each census tract would have a population

that was also ten percent black and the groups would be completely evenly distributed. With complete segregation (D=1), every subarea would be either all black or all white. The formula for the index of dissimilarity is:

$$D = 0.5 \sum |(b_i/B) - (w_i/W)|$$

where b_i and w_i are the number of blacks and whites respectively in the i^{th} neighborhood, and B and W are the number of blacks and whites in the metropolitan area as a whole. Clark (1986) points out that the index of dissimilarity may also be thought of as "the minimum proportion of blacks (or whites) who would have to change their sub-area of residence to obtain an even distribution of that race across all sub-areas of the city."

While the index of dissimilarity does describe the evenness of distribution, or alternately the equality of access, of different groups across different neighborhoods, it says nothing about the social experience of the groups involved. As long as the distributions were comparably even, D would remain unchanged regardless of whether a city was 0.5% black or 50% black; but the experiences—the amount of inter-racial contact or isolation—of residents of these two cities would clearly differ in significant ways. For this reason, the probability of interaction or exposure index (p*) is an important, complementary measure of a different aspect of segregation involving the amount of intergroup exposure within neighborhoods.

Operationally, the probability of interaction ($0 < p^* < 1$) is determined by the racial composition of one's neighborhood. Schnare (1977) supplies the useful insight that "black exposure to whites [p*(bw)] is the proportion white in the average black's neighborhood; and white exposure to

blacks [p*(wb)], the proportion of blacks in the average white's neighborhood." Obviously, neighborhood exposure and composition are strongly influenced by the racial composition of the city as a whole, and p* is thus fairly highly correlated with the city's proportion black. The probability of interaction of blacks with whites is the more commonly used measure and may be calculated as follows:

$$p^*(bw) = (1/B) \sum b_i(w_i/t_i)$$

where t_i is the total population of neighborhood i.

It helps to note that in the absence of segregation (D=0), p*(bw) would be the same as the proportion white in the total population, and p*(wb) would be the same as the proportion black in the total population. That is to say that the proportion white in the average black's neighborhood would be identical to the proportion white in the city as a whole, and the proportion black in the average white's neighborhood would be the proportion black in the city as a whole. While the values that p* can take on in a city are limited but not wholly explained by the proportion black in that city and by D, the probability of interaction does measure an aspect of segregation distinct from the dissimilarity index and a strong case can be made for measuring both (Lieberson 1980; Lieberson and Carter 1982a).

Clearly p* is a useful measure of the amount of (or potential for) intergroup interaction that actually exists in a city. It is a descriptive and absolute measure, which incorporates the overall racial composition of the city in determining the probability of interaction. It would be impossible to have a high p*(wb), for example, in a city with very few blacks, even absent segregation. For this reason it is useful to also have

a relative measure of the probability of interaction given the city's overall racial composition. This permits normative evaluations and comparisons of different cities. Though often derived in different ways, the correlation ratio (eta^2) is such a relative measure, gauging how much the actual p* value for a city differs from its best case (or expected) value in the absence of segregation. Thus, for two racial groups,

$$eta^2 = [P_w - p^*(bw)]/P_w$$

and

$$eta^2 = [P_b - p^*(wb)]/P_b$$

Viewed differently, the correlation ratio—and its twins, McKinney and Schnare's (1986) relative exposure index, Bell's (1954) "revised index of segregation," Zoloth's (1976) "segregation index," and Coleman's "r" measure of segregation (Coleman et al., 1975)—is a variance based measure of the difference in the racial composition of a city's neighborhoods (Stearns and Logan 1986). If t_i and q_i are the population and the percentage black in the i^{th} neighborhood, and T, q, and p stand for the total population, overall percentage black, and the overall percentage white in the larger area, then

$$eta^2 = \frac{\sum t_i q_i^2}{Tpq} - \frac{q}{p}$$

In fact, eta^2 is but one of several adjusted measures put forward by different scholars. Winship (1977) advocates an adjusted index of dissimilarity that compares actual segregation with random segregation rather than with the complete and artificial absence of segregation. He points out that "a residential housing pattern is random if households

choose their place of residence without regard to the racial composition of the neighborhood....Only if people chose to live in neighborhoods that were completely desegregated, would we have a situation in which there was complete desegregation in the city as a whole." Interestingly, the degree of random segregation expected, and thus the adjusted D, would vary with the racial composition of the city. McKinney and Schnare (1986) propose an adjusted exposure rate that compares actual exposure to that which would occur "if blacks and whites were distributed across different neighborhoods according to their ability to pay for housing."

Logan and Schneider (1984) and Stearns and Logan (1986) among others have conducted tests of the various measures to determine their behavior in simplified, model cities undergoing simulated changes in residential patterns. Each measure is sensitive not only to a different aspect of what we understand as segregation but also to a different type of change in patterns of residential segregation—D to invasion, for example, and eta^2 to succession (see Stearns and Logan 1986). It is easy to simulate changes in which one measure of segregation remains unchanged while another steadily increases or decreases, where measures are moving in opposite directions, or even where a single, steady trend in the residential pattern produces first a rise and then a fall in one of the measures of segregation. And in fact, in studies of actual cities over time, correlations between the different measures are far from perfect: Stearns and Logan (ibid.) report that

> [t]he correlation between change in D and change in eta^2 is .54, reflecting the fact that although these two dimensions often change in the same direction, they are certainly not substitutable for one another. On the other hand, change in eta^2 and change in p*(bw) are virtually identical with a correlation of -.99. Change in

> p*(wb), by contrast, is more highly correlated with change in the proportion of blacks (r=.64) than in eta^2 (r=-.43). One consequence is that changes in the two p* measures are barely correlated (r=-.27)....

Scale of analysis is a crucial consideration. The size and number of sub-areas used in the above measures influence the degree of segregation revealed. In the extreme example of one sub-area (the whole city), there would of course be no segregation, since the composition of the subarea would be the same as that of the whole area, and the probability of interaction the same as the percentage minority in the whole city. By contrast, the smaller the sub-area, the higher the level of segregation measured since any racial concentrations are discerned in progressively finer detail rather than being averaged out. Moreover, in addition to showing different levels of segregation, studies of the same region or group of regions which use different scales of sub-areas often show different trends in segregation (see Hammond and McCullagh 1978). Thus, studies that use block statistics can not be compared to studies that those that use census tract data, which in turn can not be compared to those that define sub-areas as political jurisdictions. And conclusions about trends must be couched in terms of the scale at which they are occurring.

Aside from characteristics of the measures themselves, a reading of the literature suggests that three other factors require attention when attempting to compare studies of segregation. First, most authors simply average SMSAs together to obtain aggregate figures, but some calculate averages weighted by the population of the SMSA to better reflect the experience of the average person. Second, the number of SMSAs included in

a study is important. Studies of a handful or a few dozen SMSAs typically consist of the nation's largest cities, which have tended to show both different levels and trends in segregation than the medium-sized and smaller SMSAs which could be included in studies which look at a large number of SMSAs. Even studies which include all SMSAs extant in two given years are subject to skewed results due to the differential scores of the small, growing cities which became SMSAs during the study period (see Van Valey, Roof, and Wilcox 1977). And third, the definitions of minority groups must be "mutually exclusive and intercensally comparable" (Massey and Denton, 1987). Common pitfalls include failing to heed the crucial significance of the distinctions between blacks and non-whites, between whites and non-hispanic whites (Anglos), and between the various definitions of hispanics that the census and others have employed over recent decades. Rather than simply noting differences in definition, researchers should conscientiously refrain from proclaiming trends or making comparisons when the definitional wildcard is capable of producing differences several times the size of those which may occur over a decade or between cities.

Clearly, segregation is not a simple concept and is even more difficult to describe meaningfully with statistical measures. Moreover, as Clark (1986) points out, "[t]he increasingly tri-ethnic (and in some cities, multi-ethnic) structure of metropolitan areas complicates our interpretation of these indices...." Each measure of segregation in use is very sensitive, but tends to be sensitive to some things that are peripheral to a concern with segregation and insensitive to others that are at the core of interest. Thus, in addition to relying on the researcher's

careful interpretation of his or her results, readers would do well to pay close attention to a study's methods, the demographic context, what each measure actually measures, and ultimately to what the study's results do and do not imply about changing patterns of segregation. The multifariousness of the concept of segregation and our thirst for knowledge about its existence in American cities accounts for the volume of literature on the topic. But unfortunately, the literature does not build on itself effectively—because of methodological differences and changing data—and what remains is a large number of discrete pieces of research. Study by study, moreover, what is discovered is often less than what is claimed was discovered, and a survey of what is known about residential segregation in U.S. cities requires a careful gleaning from the literature.

2.0 Absolute levels of segregation and group comparisons

The high degree of segregation of black residences from those of whites is amply documented by metropolitan indices of dissimilarity in the 0.65–0.85 range for census tract studies (Van Valey et al 1977; Clark 1986; Massey 1979; Massey and Denton 1987; Langberg and Farley 1985; Stearns and Logan 1986). Few cities, in fact, can boast indices less than 0.6. Hispanics are decidedly less segregated from non-hispanic whites than are blacks, with D typically in the 0.35–0.55 range in comparable studies (Massey and Denton 1987; Langberg and Farley 1985; Massey 1979). Indices of dissimilarity for Asian residences range from 0.25–0.45, overlapping considerably with those for hispanics but averaging somewhat less (Woolbright and Hartmann 1988; Langberg and Farley 1985; Massey and Denton 1987).

The probabilities of interaction between groups describe segregation in an equally dramatic way. In 1980, the average black lived in a census tract that was 38% non-hispanic white. Meanwhile, the average non-hispanic white lived in a census tract that was 5% black (Massey and Denton 1987; see also McKinney and Schnare 1986). For hispanics, the corresponding exposure indices with non-hispanic whites were 64% and 8%, and for Asians 74% and 2% (Massey and Denton 1987). Clearly, some of the differences in exposure are due to the differing sizes of these three minority populations in the U.S., but no author has compared relative exposure indices for these groups. Significantly, by any measure, both hispanics and asians are more segregated from blacks than from other whites.

McKinney and Schnare (1986) disaggregates the exposure data for blacks somewhat to present a dramatic and useful display of metropolitan racial segregation (Table 1). That thirty-one percent of blacks live in census tracts that are more than 90% black, and 57% of whites live in census tracts that are less than one percent black is a clear and dramatic statement of the segregated state of metropolitan areas in the U.S. today.

TABLE 1

DISTRIBUTION OF HOUSEHOLDS BY PERCENT BLACK IN TRACT: 1980

Percent Black in Tract	Percent of Blacks Residing in Tracts	Percent of Whites Residing in Tracts
< 1	1.8	57.2
1-4	3.3	17.1
5-19	11.6	16.9
20-49	21.0	6.8
50-89	31.3	1.8
90+	31.0	0.2
Total	100.0	100.0

Source: McKinney and Schnare 1986, Table 2.

There is consensus that race—and specifically black race—is more of a factor in segregation than culture or ethnicity. Historically, immigrant nationalities or cultures have remained together (or been segregated) in identifiable urban neighborhoods until such time as their socioeconomic status improves and they are assimilated into mainstream American society. And indeed, several authors find that present levels of residential segregation for hispanics and Asians are comparable to those experienced by

newly arrived European immigrant groups in the late nineteenth and early twentieth century (see Massey 1981; Massey and Denton 1987; Woolbright and Hartmann 1988). Blacks, on the other hand, have been in the U.S. longer on average than Asians, hispanics, and whites and have a lower percent foreign born than any of these groups (Woolbright and Hartmann 1988). Yet assimilation has not worked for them, and they remain by far the most segregated group in American society.

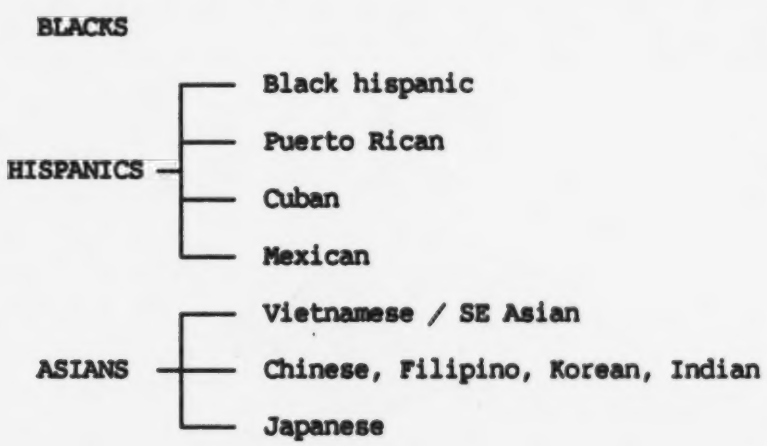
In fact, disaggregated data on hispanic segregation provides an interesting window into the race vs. culture question, since a fraction of hispanics are also black. Massey and Mullan (1985) conclude:

> In spite of common language, culture, and religion—in short, a common 'ethnicity'—white and black Hispanics are highly segregated from each other and display completely opposite residential patterns with respect to non-Hispanic blacks and whites. Black Hispanics are, on average, nearly twice as segregated from Anglos as are white Hispanics. Indeed, they are more segregated from Anglos than from blacks in every city, whereas white Hispanics are, with one exception [New York], always more segregated from blacks than from Anglos.

Goldstein and White (1985) and Massey and Denton (1987) draw similar conclusions. However, it is only an implicit assumption that black and white hispanics share a common culture in their countries of origin, for substantial segregation and discrimination by race are known to exist in many Latin American countries. A more complete interpretation is that race and culture are intertwined, such that color barriers, both in the U.S. and abroad, have fostered and perpetuated the coexistence of substantially separate cultures within the same society.

Several studies have separated out more specific (usually national) groups to see how their residential segregation rates differ. An overview

of this research (Lam 1986; Massey 1981; Woolbright and Hartmann 1988; Langberg and Farley 1985; White 1986) permits a crude ranking of minority groups by degree of segregation from white Anglo Americans. From most segregated to least, this ranking is as follows:



3.0 Segregation over time

The residential segregation of blacks diminished slightly between 1960 and 1980. However, the 1960s was a decade of actual deterioration in residential segregation, despite the prominence of action on the civil rights front. Substantial improvements in the 1970s offset this deterioration and left the nation's cities marginally less segregated in 1980 than they were in 1960. All in all, both the trend of the 1970s and other indicators lend reason for optimism that residential segregation will have continued to decline during the 1980s, but data to verify this hypothesis will not be forthcoming until the early 1990s.

CHANGING MEASURES OF SEGREGATION FOR BLACKS: 1960 - 1980

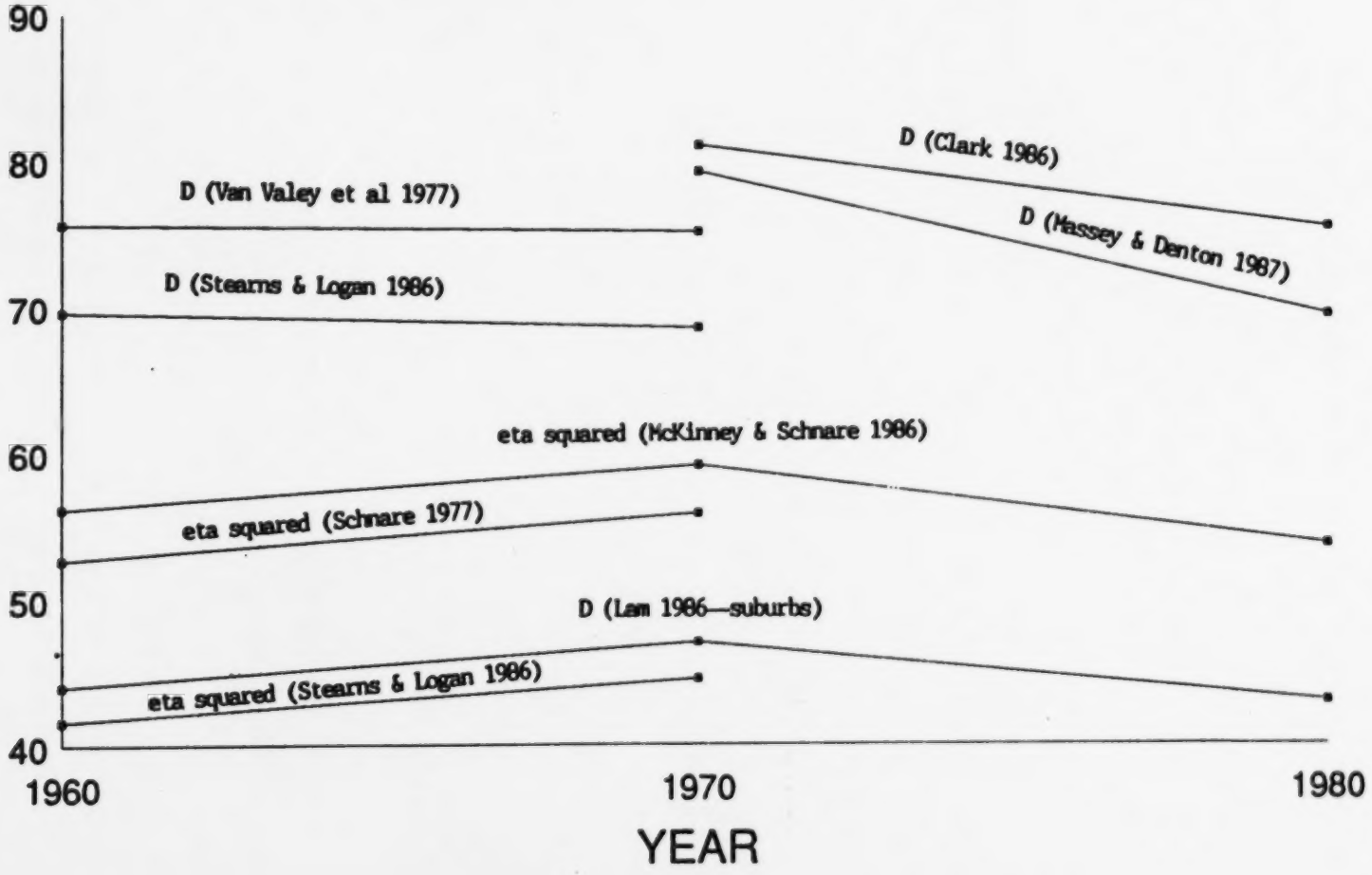


FIGURE 1

Figure 1 presents changes in two measures of segregation for blacks from 1960 to 1980. Upward slopes signify increased segregation (the 1960s) and downward slopes diminished segregation (the 1970s). Whereas the index of dissimilarity changed little between 1960 and 1970, segregation as measured by eta^2 rose substantially. Between 1970 and 1980, both measures declined. The p*(bw) measure is not shown since it correlates very closely, though inversely, with eta^2 and since its inclusion would confuse the visual impact of the graph. The exposure of whites to blacks, p*(wb), rose during both the 1960s and the 1970s, most likely reflecting the growing black metropolitan population and the areal expansion of mixed neighborhoods where interaction occurs (see Schnare 1978; McKinney and Schnare 1986). That white exposure to blacks could increase at the same time that black exposure to whites decreases illustrates how the assymmetrical quality of the p* index captures two different sides of segregation. Lieberson and Carter (1982a) comment that

> [t]he assymmetrical quality of the p* indexes allows us to understand how the same process, residential isolation, may appear radically different to the groups involved, because, in fact, the situation and the trends are different....Under such circumstances, each group will generate totally different conclusions, each being correct but simply not applicable to the events experienced by the other group.

In fact, the trends in individual SMSAs show considerably more complexity than average measures reveal. Whatever trend a study reveals, typically one third or more of the cities studied will exhibit the opposite trend. And a substantial number of cities will usually exhibit divergent trends on the different measures. Stearns and Logan's (1986) findings for SMSAs in the 1960s illustrate: "In the majority of cases, D went down (37

versus 23 up). In the majority of cases, eta^2 went up (41 versus 23 down). In 12 cases, D went down but eta^2 went up. In 2 cases, D went up but eta^2 went down." Thus, as always, it is unwise to draw city-specific conclusions from general trends. A subsequent section will address what can be learned about segregation by disaggregating the data for different regions of the country and different types of cities.

No good study exists of changes in hispanic residential segregation between 1960 and 1970. Woolbright and Hartmann (1988) conclude that "segregation has been decreasing significantly for whites and hispanics between 1960 and 1980," but their study includes only seven cities, five of which are in the southwest, and changes in the way hispanics were identified introduce a significant unknown. Massey and Denton (1987) study 60 SMSAs from 1970 to 1980, but recognize that they are also hampered by census changes in the hispanic definition. They find little change in the index of dissimilarity for hispanics (from 0.44 to 0.43), but a significant rise in eta^2 (indicated by a fall in p*(hw) from 0.71 to 0.64). Their finding—that the cities with the largest and fastest growing hispanic populations are also those with the greatest increases in spatial dissimilarity—may suggest that segregation indices are responding more to dramatic demographic growth than to shifting patterns of residential segregation. It also suggests that weighting each SMSA by the size of its hispanic population would show that the average hispanic was living in a more segregated environment in 1980 than he was in 1970.

Lam's (1986) study of Chinese and Japanese American residents in suburban municipalities in the 1960s found decreasing indices of dissimilarity for Chinese and Japanese Americans in the 1960s. During the

1970s, 59 of the 60 SMSAs in the census tract study by Massey and Denton (1987) also exhibited declines. The authors explain:

> Asians also experienced substantial immigration and rapid population growth over the past decade. In the vast majority of SMSAs, the Asian population at least doubled, and in some cases it tripled or quadrupled....But with a few exceptions...there was no recognizable Asian enclave upon which to build. Entering the urban environment, Asians probably sought residences near one another, but there were few Asian neighborhoods in existence, so Asian growth typically entailed entry into Anglo neighborhoods.
> ...If Asian migration continues, however, this level will most likely increase as Asian enclaves emerge and become poles of attraction for new immigrants (ibid.).

4.0 Regional differences and trends

Dissaggregating national trends by region sheds light on differential patterns of segregation in U.S. cities. Table 2 presents the four U.S. Census regions ranked by D, p*(bw), and eta^2 for blacks in 1980 and by trends in those three measures over the most recent decade. Ordinal data is used in this review to facilitate the creation of a comprehensible picture of residential segregation from different measures and research methodologies.

The clearest finding to emerge is that the metropolitan areas of the North Central region are the most segregated in the country. The North Central also shows the least encouraging trends. Data in fact show that the North Central region was also the most segregated in both 1960 and 1970 (Schnare 1977; McKinney and Schnare 1986; Van Valey et al 1977). While the West and Northeast have the highest interaction probabilities, the West has a less laudatory (but improving) eta^2, and the Northeast a high (and relatively stagnant) index of dissimilarity. The South remains inconspicuously in the middle ranks of Table 2.

TABLE 2

		BEST (least segregated, best trends)			WORST (most segregated, worst trends)	Source
LEVEL	D 1980	W	S	NE	NC	Massey & Denton
	p*(bw) 1980	W	NE	S	NC	Massey & Denton
	1980	NE	W	S	NC	McKinney & Schnare
	eta^2 1980	NE	S	W	NC	McKinney & Schnare
TREND	D 1970–80	W(-)	S(-)	NC(-)	NE(-)	Massey & Denton
	p*(bw) 1970–80	W	S	NC	NE(-)	Massey & Denton
	1970–80	NE	W	S	NC	McKinney & Schnare
	eta^2 1970–80	W(-)	NE(-)	S(-)	NC(-)	McKinney & Schnare

Note: (-) denotes a downward trend.

For hispanics and Asians, the North Central is also the home of the worst (most segregated) exposure indices [p*(hw) and p*(aw)], followed by the Northeast, South, and West. The Northeast is most segregated on the basis of the index of dissimilarity, followed by the North Central, West, and South. For further data on regional variations of hispanic and Asian residential segregation, the reader is referred to Massey and Denton (1987).

5.0 Other variables

Levels and trends of residential segregation also vary (though not always systematically) along other SMSAs stratifiers. In general, the highest indices of dissimilarity and the lowest probalities of interaction

of blacks with whites occur in SMSAs with the largest populations, the slowest rates of population growth, and the largest minority populations. Trends towards improvement in segregation statistics are strongest in SMSAs with rapid population growth or small existing minority populations (see Massey and Denton 1987; Van Valey et al 1977). These findings are consistent with the levels and trends in segregation by region discussed above.

McKinney and Schnare (1986) discover dramatic differences in p* and eta^2 measures between low, middle, and high income neighborhoods. (See Table 3.)

Table 3: 1980 Measures of Segregation by Neighborhood Type

	Low Income	Middle Income	High Income
P*(bw)	0.24	0.47	0.72
P*(wb)	0.15	0.06	0.03
eta^2	0.53	0.37	0.20

Note: Income groups defined by SMSA terciles.
Source: McKinney and Schnare (1986) Tables 4, 5, and 6.

6.0 How does change in segregation occur?

Since the measures of segregation gauge the relative distribution of households, declines or increases in segregation are due to change in the distribution of households. This change can take many forms: minority or majority household formation; the interjection of a second minority group; movement of minority or majority households; movement within SMSAs; movement across SMSA boundaries; movement between SMSAs. The why of such

movements is a separate question yet, involving consideration of reduced barriers to movement, higher incomes, demographic and migratory trends, etc.

The measures of segregation themselves reveal little about how or why any changes took place. And in fact, there is little agreement as yet as to how change in segregation has actually occurred. Studies that have ventured explanations generally draw inferences from segregation statistics for SMSAs or neighborhoods stratified along one or more variables. But whereas these do show correlated characteristics, the how and why are still largely speculative.

Particularly controversial is the integrational role of black suburbanization (see Clark 1986). On the face of it, movement of blacks from a more black central city to a substantially less black suburban ring would reduce segregation. But scale of analysis is again critical: the movement clearly influences bimodal segregation statistics such as Massey's (1979) index of urban concentration (see also Turner and Page 1987; Grier and Grier 1988; Nelson 1979), but does not necessarily appear in segregation measured by smaller areas such as census tract. At issue is the extent to which blacks who move to the suburbs simply "spill over" from the central cities and remain in largely black suburban neighborhoods (Rose 1976; Lake 1981; Grier and Grier 1988), as opposed to dispersing into—and thus integrating—predominantly white suburban neighborhoods (Clay 1979; Spain and Long 1981; Nelson 1979). McKinney and Schnare (1986) find that, although segregation scores remained the same or even increased in both the central city and suburbs, and in low, middle, and high income neighborhoods, the overall segregation of blacks declined because blacks

were moving from areas with more segregation (low income and central city) to those with less (middle and high income, suburban).

By sharp contrast, Massey and Denton (1987) conclude from a similar study that:

> [t]he level of black segregation is not strongly related to indicators of socioeconomic status, SES is unrelated to black suburbanization, and the level of black suburbanization has no influence on segregation. In short, a key step in the process of spatial assimilation for other groups, suburbanization, plays no role in black integration....Either blacks are moving to suburbs in numbers too small to make a difference or suburbs and central cities are equally segregated.

Their work suggests instead that

> [i]f black residential integration has occurred at all, it has not been through residential mobility within metropolitan areas where the vast majority of blacks live, but through movement to small and mid-sized cities that presently contain few black residents. Perhaps the growth of black populations in these smaller metropolitan areas will be the means by which residential integration will finally occur in the United States (ibid.).

There is a plausible negotiation of this conflicting interpretation of similar data on black suburbanization.

> Spain and Long (1981) conclude that because nearly 70 percent of all blacks in their sample moved to suburban tracts that were more white than black, a pattern of black movement to predominantly white neighborhoods exists. This statistic, however, is more likely due to the fact that the suburbs as a whole were over 90 percent white in both 1970 and 1980. Very few suburban tracts with black majorities exist. But given the growing black population (over 60 percent choosing suburban tracts less than 90 percent white), there is little evidence to suggest that black suburbanization is effectively integrating the suburbs. Rather, it is more likely that sections of these suburbs are being transformed into predominantly black communities (JCPS 1982).

Two lessons emerge: existing statistical measures alone are not enough to reveal the how and why of the changes they record; and more must be known about the spatial form of black suburbanization before it can be

related to changes in specific aspects of segregation. Several attempts have been made recently to explain differences in segregation using statistical models to test a variety of independent variables (Lieberson and Carter 1982b; Massey and Denton 1987; Galster 1987a, 1987b, 1988a). Galster (1988b), Downing (1987), Clark (1986), Streitwieser and Goodman (1983), and Yinger et al (1979) all provide good reviews of the literature--too extensive to cover here--on the causes of residential segregation.

It bears mentioning that at least some residential segregation should be seen as normal, and that this includes not just the random segregation discussed earlier, but also segregation that is both voluntary and functional. Most clearly this encompasses the traditional role of North American cities as concentrated centers of specialized functions and opportunities. As such, cities attract certain groups, especially immigrants both from rural areas and other countries. The concentration of these groups in central cities typically includes segregation into ethnic neighborhoods of individuals from similar backgrounds and in similar positions. In the traditional sociological model, the concentrations disperse as the neighborhoods serve their function and assimilation is gradually accomplished.

Research provides no reason to challenge the continued validity of this model in describing the current segregation of Asians and hispanics. Black-white segregation is clearly another matter. The severity and intractibility of black-white segregation, however, becomes more and more clearly dysfunctional, conspiring to deny the access of some central city blacks to mainstream society, and manifest according to some in a growing underclass.

7.0 Future study

Having reviewed past studies, it seems valuable to begin applying the lessons learned to the design of the next round of residential segregation research that will follow the release of the 1990 Census. One general shortcoming of the existing body of studies is the lack of integration and comparability. Since measurable segregation is primarily a relative matter, future studies should aim to provide as many bases for comparison as possible. Therefore, it will be preferable to have one or two large, broad studies, as opposed to many smaller studies with varying methodologies and special focuses. For the extra concentration of effort and resources, the knowledge produced and the comparisons facilitated will be exponentially greater.

The ideal study (given the data available) would use census tracts as the level of analysis and include the maximum number of MSAs consistent with comparisons to previous census years. Racial and ethnic group definitions must be consistent, and it will be valuable to conduct comparisons of segregation between different minority groups (in addition to between each group and whites). Data for MSAs should be presented both weighted by population size and unweighted, to reflect the situation both of the average person and the average city; weighting is particularly significant since cities with the largest populations typically experience the highest segregation.

Moreover, rather than employing a preferred (or most common) measure of segregation, the study should calculate each measure, in recognition of their unique suitabilities at measuring different aspects of segregation and the differing experiences of that segregation. Scores should then be

stratified across all relevant variables, including both city and neighborhood characteristics. And given the sensitivity of these measures and the significance of small differences in making comparisons, all definitions and methodological decisions should be made explicit.

Finally, in seeking to make new studies comparable to old, researchers should not neglect to explore new opportunities to enhance the measurement and understanding of segregation. Even though they are better understood today, the measures used are still largely those that were around a half century ago; perhaps improvements in spatial statistics, data gathering, and computing power have opened new doors. It also seems likely that recent strides in computer cartography and the ready availability of pre-coded census tract boundary files could begin to bridge the gap between the how and what of changes in segregation. Particularly lacking at this point is an understanding of how measurable segregation is altered by spatial and demographic processes; the advantage of having a single segregation score for each city is also a disadvantage when it comes to understanding changes in segregation within a city. Census tract mapping would add a powerful tool, possibly answering many questions about which scholars can now only speculate and certainly raising others.

An in-depth mapping analysis of several cities would provide insights into issues such as the following: the spatial form of black suburbanization; the extent to which contiguous, segregated tracts form isolated racial or ethnic islands; the nature and location of transition or successfully integrating neighborhoods; and the interposition of newer immigrant groups. This sort of analysis would also make segregation research more relevant, immediate, and perhaps useful to local policy-makers than it is at present.

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